(G.B. REED) Shrimp Cruise 83-S-1. May 4-14, 1983. West Coast of Vancouver Island and Queen Charlotte Sound

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and Aquatic Sciences No. 544

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G.B. REED SHRIMP CRUISE 83-S-1. MAY 4-14, 1983. WEST COAST OF VANCOUVER ISLAND AND QUEEN CHARLOTTE SOUND

by

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ABSTRACT

Boutillier, J. A. and W. Harling. 1985. G.B. REED Shrimp Cruise 83-S-1. May 4-14, 1983. West coast of Vancouver Island and Queen Charlotte Sound. Can. Data Rep. Fish. Aquat. Sci. 544: 45 p.

This report summarizes the information obtained during the May 1983, shrimp biomass survey off the west coast of Vancouver Island and in Queen Charlotte Sound. This survey is one of a continuing series of spring surveys conducted aboard the research vessel G.B. REED, which is used to collect information on the biomass and distribution of pink shrimp Pandalus jordani. This report presents detailed catch records and the resulting evaluations of biomass and year class composition. Environmental data was also collected and a brief section discusses the physical influence of the 1982-1983 El Niño on these grounds.

RESUME

Boutillier, J. A. and W. Harling. 1985. G.B. REED Shrimp Cruise 83-S-1. May 4-14, 1983. West coast of Vancouver Island and Queen Charlotte Sound. Can. Data Rep. Fish. Aquat. Sci. 544: 45 p.

Le présent rapport résume l'information obtenue au cours d'une étude de la biomasse des crevettes réalisée en mai 1983 au large de la côte ouest de l'île Vancouver et dans le bassin Reine-Charlotte. Cette étude fait partie d'une série d'études permanentes réalisées au printemps à bord du navire de recherche G.B. REED, qu'on utilise pour recueillir de l'information sur la biomasse et la distribution de la crevette océanique (Pandalus jordani). Le présent rapport donne des statistiques détaillées sur les prises et les évaluations de la biomasse et de la composition par classe d'âge qui en découlent. On a également recueilli des données environnementales, et une petite partie du texte traite de l'action physique du courant El Niño sur ces lieux de pêche en 1982-1983.

INTRODUCTION

This document summarizes the data collected on the May 1983 shrimp biomass cruise on board the G.B. REED. The survey concentrated on obtaining biomass estimates of the Tofino and Nootka shrimp grounds (Figs. 1, 2, and 3). However, the last day of the cruise was spent exploring the Queen Charlotte Sound shrimp grounds (Fig. 4) to see if the concentrations Butler (1974) found in 1974 were again present. The survey was designed to collect data for estimating the total biomass and distributions of the smooth pink shrimp, Pandalus jordani. In addition to the trawl survey, ocean temperature profiles were collected over the grounds.

SURVEY METHODS AND FISHING GEAR

The biomass trawl survey was carried out in all three areas using a standard 18.6 m, high-rising, National Marine Fisheries Service shrimp sampling trawl (see Boutillier et al. 1977). The temperature observations were made using expendable bathythermographs (XBTs).

The trawl locations for the biomass survey of Tofino and Nootka grounds were established on a systematic grid pattern based on Loran C blocks. Tows were made diagonally through adjacent 5990-X blocks along 5990-Y lines. Successive 5990-Y lines were 20 microseconds apart. The trawl locations for the Queen Charlotte grounds were made on a Loran C grid in which tows were made diagonally through 5990-X blocks 20 microseconds apart along successive 5900-Y lines 20 microseconds apart. Variations in the grid patterns occurred when exploring new areas, avoiding bad bottom, or being set off by the tide and wind.

Tows lasted 30 min and covered a range of distances from 1.0 to 1.8 nautical miles (M) and an average distance of 1.5 M. Upon completion of each tow, the large fish were removed from the catch and weighed. The remaining mixed catch of shrimp, other invertebrates, and small fish was put into tubs and weighed. One tub was then sorted into shrimp and scrap, the percentage of shrimp by weight per tub was determined, and the total shrimp catch for the tow was then extrapolated. Random samples of shrimp were weighed and the number of shrimp per kilogram determined. One kilogram samples of shrimp were then sexed and measured.

RESULTS

In total, 84 trawl tows were completed: 51 on the Tofino grounds, 26 on the Nootka grounds, and 7 on the Queen Charlotte grounds. Temperature

observations were made in conjunction with 27 of the trawl tows.

Detailed bridge logs, catch records, and temperature observations, by tow, appear in Appendix table 1.

WEST COAST OF VANCOUVER ISLAND

The total catch from the Tofino and Nootka surveys off the west coast of Vancouver Island is seen in Table 1.

Tofino Grounds

The Tofino shrimp ground is a fishing area which lies offshore from the west coast of Vancouver Island between 48°40' and 49°15'. Shrimp were found only at one location in quantities above trace amounts ($\sim$ 1 kg).

The total estimated biomass for the area was 30 metric tonnes which is only 4% of the 1982 estimated biomass. The shrimp at this site were 186 per kilogram and were composed of 16% 4+, 17% 3+, 51% 2+, and 16% 1+ animals with corresponding carapace lengths of 22.9, 20.9, 17.6, and 12.8 mm.

Nootka Grounds

The Nootka ground is a fishing area which lies offshore from the west coast of Vancouver Island between 49°15' and 49°35'. The concentration of shrimp for this survey was found in two areas on the grounds.

The major area of concentration was a 43 Km^2 area located in the central portion of the grounds from Loran C 5990-Y-29460 to 5990-Y-29510 between 74 and 78 fathoms (Fig. 3). The catch rates in this area ranged from 29 to 574 kg per half-hour towed.

The remaining concentration of shrimp was found in a 44 Km^2 areas located in the southern portion of the grounds from Loran C 5990-Y-29410 to 5990-Y-29440 between 80 to 84 fathoms (Fig. 3). The catch rates in this area ranged from 35 to 242 kg per half-hour towed.

The total combined shrimp biomass for both areas was estimated at 604 metric tonnes which is greater then the 1982 estimate by a factor of 3.5. Within the area the shrimp ranged in size from 274 to 325 shrimp per kilogram with a weighted mean count of 280 shrimp per kilogram. The unweighted samples were composed of 7% 3+, 87% 2+, and 6% 1+ animals with corresponding mean carapace lengths of 21.4, 18.6, and 14.2 mm.

QUEEN CHARLOTTE SOUND

The survey in Queen Charlotte Sound was conducted in an area known as the northeast corner of the Goose Island grounds (Fig. 4). Shrimp were found in all 7 tows made on these grounds with catch rates varying from trace to 30 Kg per half hour towed. Shrimp counts ranged from 256 to 372 shrimp per kilogram. The unweighted samples were composed of 43% 3+, 37% 2+, and 20% 1+ animals with corresponding mean carapace length of 19.1, 16.1, and 11.9 mm.

Biomass estimates were not attempted for these grounds since time constraints prevented conducting an extensive enough survey to delineate the total area of shrimp concentrations. A non-parametric Mann-Whitney U-test was carried out comparing the 1983 tows (number of shrimp per 1 M towed) with the 1982 tows for the same area. The results indicated that there was no significant difference between the catch rates.

The total catch for the survey in Queen Charlotte Sound is summarized by important species as listed in Table 2.

TEMPERATURE OBSERVATIONS

A total of 27 temperature observations were taken: 16 on the Tofino ground, 9 on the Nootka ground, and 2 in Queen Charlotte Sound. An examination of this data by Dodimead (pers. comm.) found that in a comparison with data gathered on 1977-1981 May shrimp surveys the bottom temperatures in 1983 on the continental shelf at depths between 90-180 m were 0.4-1.5°C higher. These increased bottom temperatures were associated with an extreme El Nino which occurred in 1982-1983. In addition to this bottom temperature data, Dodimead (pers. comm.) points out that the monthly mean sea surface temperatures at the coastal light-stations were 1-2°C above the long-term means during January-April 1983.

REFERENCES

Boutillier, J. A., A. N. Yates, and T. H. Butler. 1977. G.B. REED Shrimp Cruise 77-5-1 May 3-14, 1977. Fish. Mar. Serv. Data Rep. 37: 42 p.

Butler, T. H., A. N. Yates, and D. C. Miller. 1974. G.B. REED Shrimp Cruise in Queen Charlotte Sound, April, 1974. Fish. Mar. Serv. Circular 98: 44 p.

Dodimead, A. (pers. comm.) Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, British Columbia.

Table 1. West coast survey May 1983 summary of total catch by species for the cruise.

SPECIES	KG	PERCENT
PINK (JORDANI)	920.	6.33
PRAWN (PLATYCEROS)	1.	0.01
ARGIS SPP.	0.	0.00
PARACRANGON SPP.	0.	0.00
CRANGON SPP.	0.	0.00
EUALUS SPP.	0.	0.00
JELLYFISH	5.	0.03
ANEMONE	3.	0.02
CLASS GASTROPODA	0.	0.00
MOON SNAIL	0.	0.00
OREGON TRITON	0.	0.00
SCALLOP	0.	0.00
ROSSIA	1.	0.01
SQUID	0.	0.00
LOLIGO OPALESCENCE	0.	0.00
OCTOPUS	0.	0.00
APHRODITA SP.	0.	0.00
STARFISH	19.	0.13
SEA SLUGS	0.	0.00
BRITTLE STARS	752.	5.18
BASKET STARS	12.	0.08
SEA URCHINS	151.	1.04
HEART URCHIN	56.	0.39
SEA CUCUMBER	124.	0.85
HEMICHORDATA	1.	0.01
HERMIT CRAB	0.	0.00
BOX CRAB	14.	0.10
TANNER CRAB	0.	0.00
DAB (PACIFIC)	287.	1.98
DOVER SOLE	54.	0.37
ENGLISH SOLE	80.	0.55

Table 1 (cont'd)

SPECIES	KG	PERCENT
FLATHEAD SOLE	217.	1.49
HALIBUT	78.	0.54
PETRALE SOLE	60.	0.41
REX SOLE	789.	5.43
SLENDER SOLE	115.	0.79
TURBOT	57.	0.39
ROCKFISH	45.	0.31
S. BABCOCKI	0.	0.00
S. BREVISPINIS	192.	1.32
S. CRAMERI	15.	0.10
S. ELONGATUS	7.	0.05
S. FLAVIDUS	2.	0.01
S. MELANOPS	1.	0.01
S. PAUCISPINIS	182.	1.25
S. PINNIGER	4065.	27.98
S. PRORIGER	30.	0.21
S. ZACENTRUS	5.	0.03
BLACKCOD	53.	0.36
SALMON	3.	0.02
CYMATOGASTER	5.	0.03
EELPOUTS	0.	0.00
EULACHON	253.	1.74
HAKE	0.	0.00
HERRING	34.	0.23
LINGCOD	2224.	15.31
PACIFIC COD	21.	0.14
POACHERS	0.	0.00
WALLEYE POLLOCK	338.	2.33
RONQUILS	0.	0.00
CHUB MACKERAL	0.	0.00
SCULPINS	0.	0.00
SHAD	2.	0.01
TOMCOD	410.	2.82
WOLF-EEL	5.	0.03
DOGFISH	2736.	18.84
RATFISH	2.	0.01
SKATES	100.	0.69

TOTAL KG = 14526. NUMBER OF SPECIES PRESENT = 68

Table 2. QCS survey May 1983 summary of total catch by species for the cruise.

SPECIES	KG	PERCENT
PINK (JORDANI)	73.	10.11
PRAWN (PLATYCEROS)	0.	0.00
SIDESTRIPE	0.	0.00
SPONGES	0.	0.00
ANEMONE	0.	0.00
LIMPETS	0.	0.00
ROSSIA	0.	0.00
OCTOPUS	0.	0.00
PHY BRANCHIOPODA	0.	0.00
STARFISH	0.	0.00
BRITTLE STARS	1.	0.14
SEA URCHINS	1.	0.14
SEA CUCUMBER	0.	0.00
HERMIT CRAB	0.	0.00
DOVER SOLE	94.	13.02
HALIBUT	17.	2.35
REX SOLE	1.	0.14
SLENDER SOLE	0.	0.00
TURBOT	180.	24.93
S. ALEUTIANUS	0.	0.00
S. ALUTUS	262.	36.29
S. BABCOCKI	21.	2.91
S. BREVISPINIS	0.	0.00
S. CRAMERI	0.	0.00
S. FLAVIDUS	0.	0.00
S. PAUCISPINIS	5.	0.69
S. ALASCANUS	6.	0.83
BLACKCOD	7.	0.97

Table 2 (cont'd)

SPECIES	KG	PERCENT
EULACHON	10.	1.39
HAKE	1.	0.14
HERRING	0.	0.00
WALLEYE POLLOCK	13.	1.80
DOGFISH	28.	3.88
RATFISH	2.	0.28

TOTAL KG = 722. NUMBER OF SPECIES PRESENT = 34

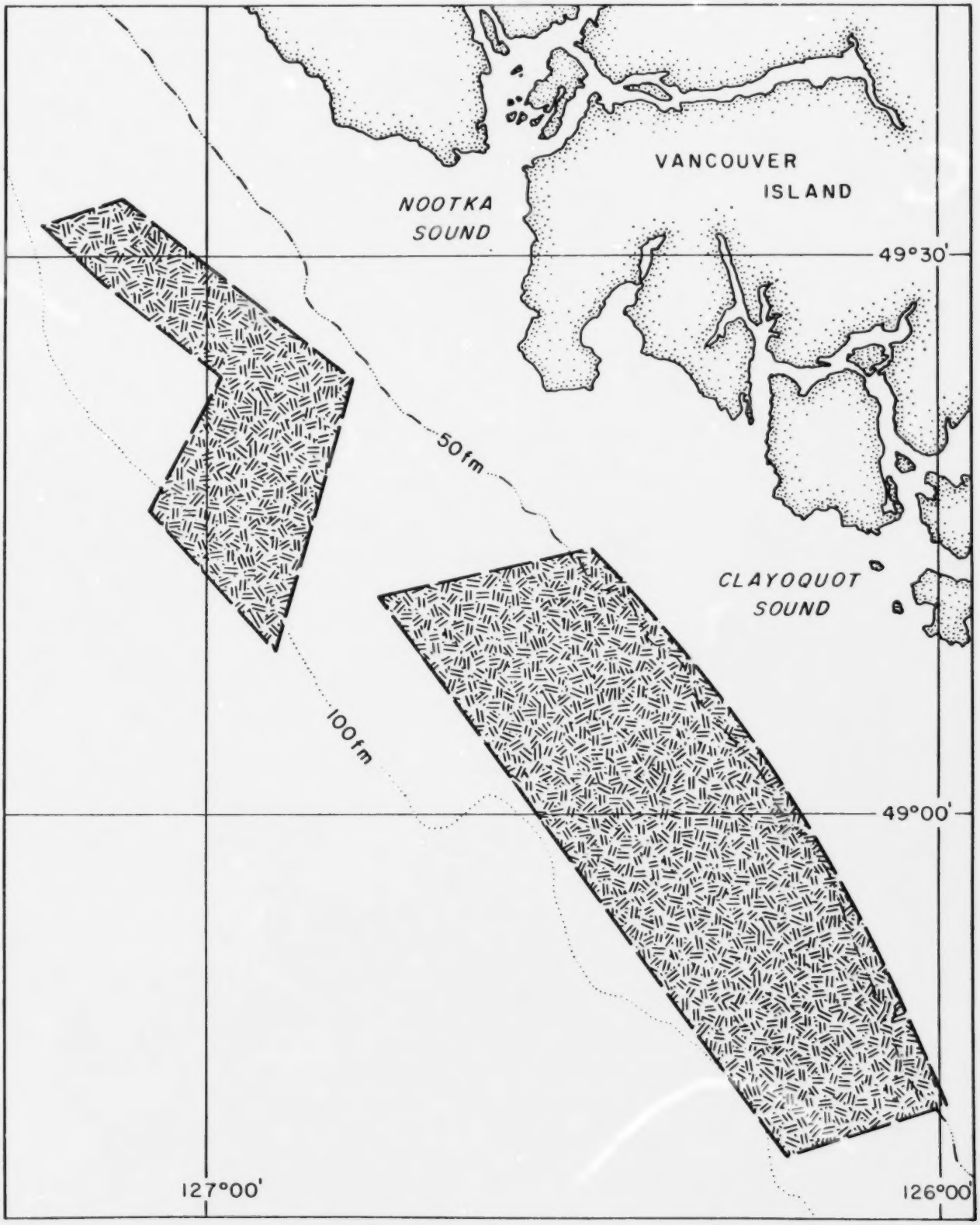


Fig. 1. Chart of fishing area off the west coast of Vancouver Island.

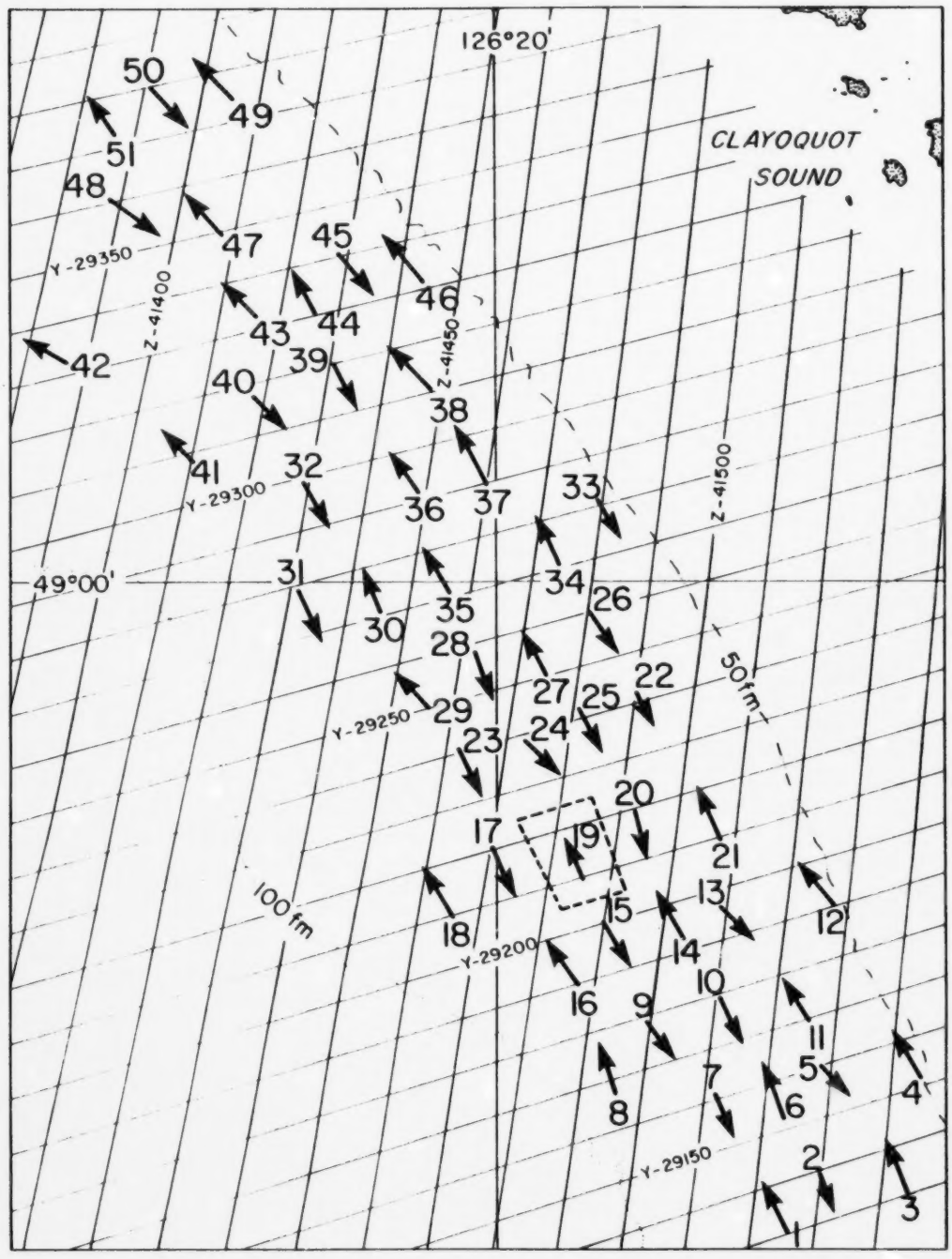
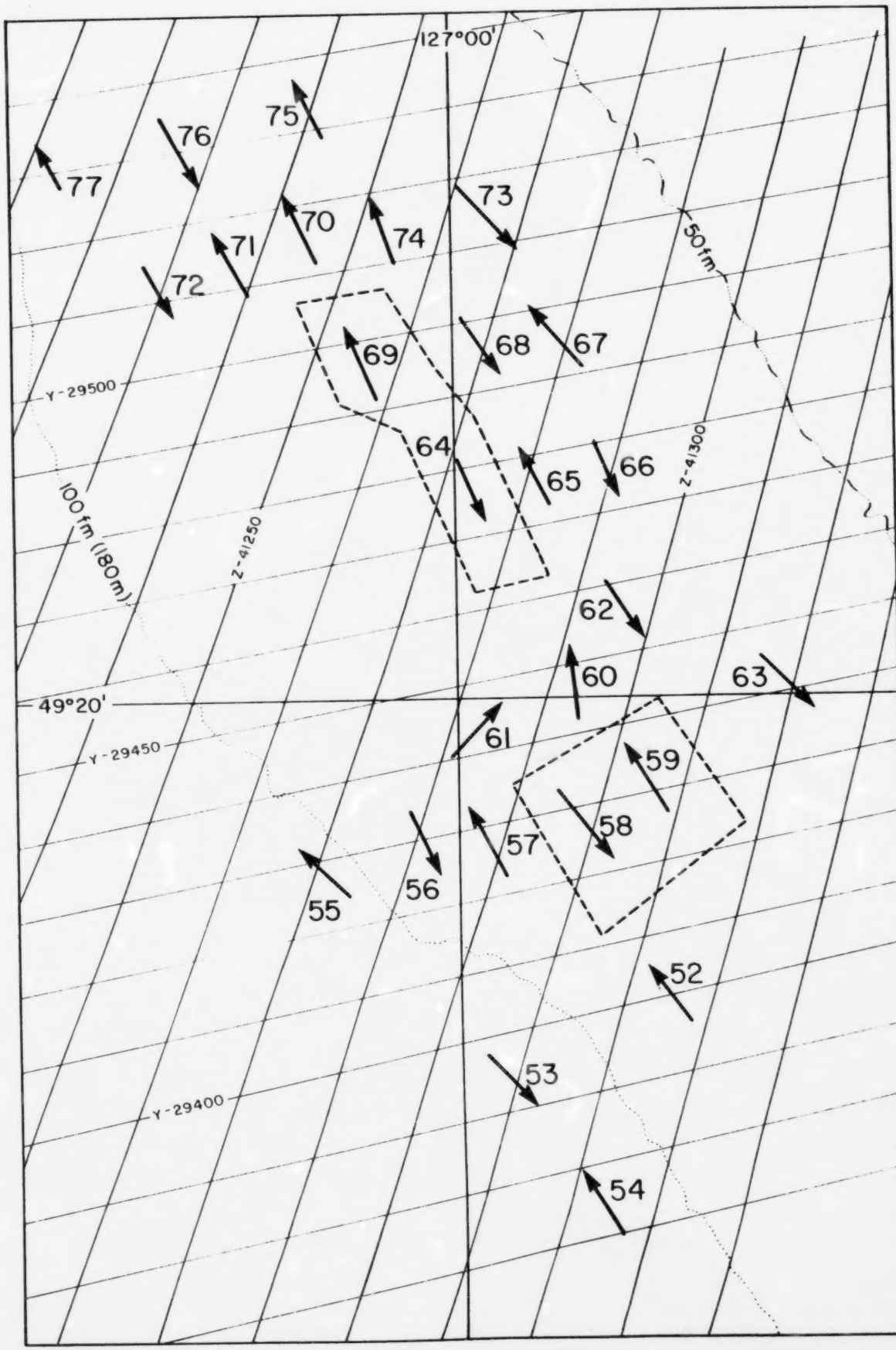


Fig. 2. Location of trawl tows and the boundary of the shrimp concentration on the Tofino grounds.

Fig. 3. Location of trawl tows and the boundary of the shrimp concentrations on the Nootka grounds.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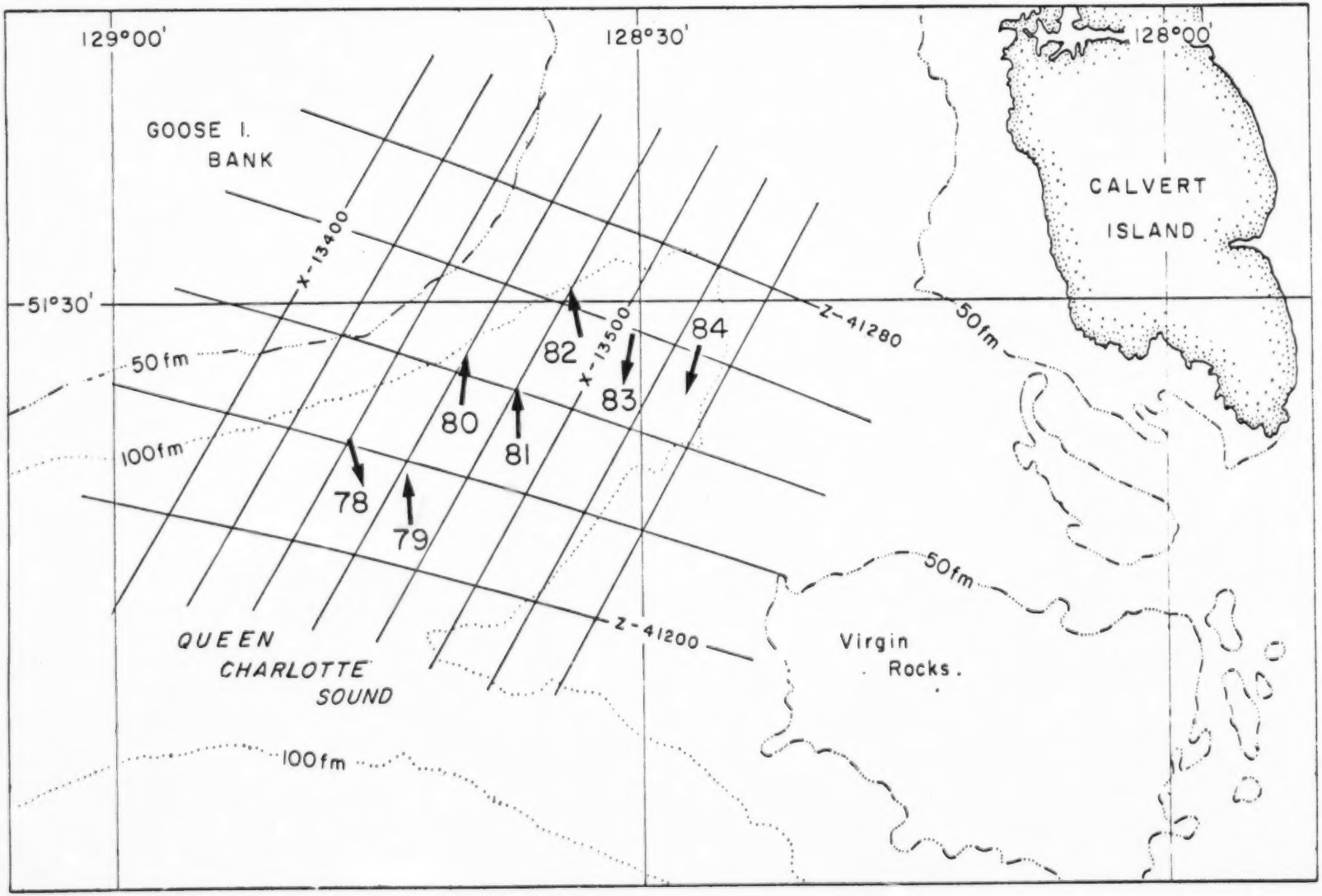

Fig. 4. Location of trawl tows for the fishing area in Queen Charlotte Sound.

Appendix table 1. Fishing conditions, locations and catches during the G.B. REED shrimp survey May 1983 S-1-83 see footnote at end of table for explanation of terms.

HAUL NO.	1	2	3	4	5	6
DATE	MAY 4	MAY 4	MAY 4	MAY 4	MAY 4	MAY 4
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	727	842	1003	1134	1241	1350
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	42.4	44.0	43.5	46.7	47.0	45.5
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	8.0	6.7	3.1	2.6	6.7	8.2
DIRECTION (DEG.TRUE)	335	155	340	332	137	339
FINISH N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	43.8	43.0	45.0	48.0	46.1	47.1
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	9.1	6.1	4.0	3.7	5.5	9.1
DISTANCE NAUT. MI.	1.6	1.2	1.6	1.5	1.2	1.7
DEPTH (FATHOMS)	73- 73	66- 66	57- 57	48- 50	60- 58	68- 68
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	..	12.0	..	..	12.7
BOTTOM TEMP. (DEG.C)	..	..	9.1	..	..	8.7
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	..	683	11	48	56	15
REMARKS	UNUSABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	1	2	3	4	5	6
DATE	MAY 4	MAY 4	MAY 4	MAY 4	MAY 4	MAY 4
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	0	683	11	48	56	15
SHRIMP						
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	T	T	T	T
INVERTBRATES						
BRITTLE STARS	..	665	2	2	2	3
SEA URCHINS	..	T	T	..	T	T
HEART URCHIN	..	..	..	..	..	..
SEA CUCUMBER	..	..	..	T	T	..
OTHERS	T	11	T	1	12	T
FLATFISH						
DAB (PACIFIC)	..	T	6	34	15	..
FLATHEAD SOLE	..	..	..	..	T	..
REX SOLE	..	T	1	2	6	4
TURBOT	..	T	T	T	1	1
OTHERS	..	1	2	3	6	2
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	..	..	..	..	T
OTHER ROUNDFISH						
EULACHON	..	T	..	T	..	T
LINGCOD	..	3	..	6	6	4
WALLEYE POLLOCK	..	..	..	..	..	..
TOMCOD	..	T	T	..	5	..
OTHERS	..	1	T	T	3	1
SELACHI						
DOGFISH	..	1	..	..	..	..
OTHERS	..	1	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	7	8	9	10	11	12
DATE	MAY 4	MAY 4	MAY 4	MAY 5	MAY 5	MAY 5
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1458	1640	1748	715	830	940
DURATION (HR.MIN)	.30	.30	.28	.30	.30	.30
START N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	46.2	46.2	48.2	48.8	48.2	51.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	11.0	15.0	13.8	10.8	7.1	6.1
DIRECTION (DEG.TRUE)	160	342	145	150	330	320
FINISH N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	45.0	47.5	47.1	47.5	49.3	52.5
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	10.2	15.7	12.6	9.9	8.2	7.6
DISTANCE NAUT. MI.	1.3	1.5	1.4	1.4	1.4	1.6
DEPTH (FATHOMS)	76- 76	90- 90	80- 82	70- 70	59- 61	49- 51
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	12.7	..	..	11.8	..
BOTTOM TEMP. (DEG.C)	..	7.8	..	..	8.7	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	140	282	78	24	84	33
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	7	8	9	10	11	12
DATE	MAY 4	MAY 4	MAY 4	MAY 5	MAY 5	MAY 5
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	140	282	78	24	84	33
SHRIMP						
PINK (JORDANI)	..	..	T	T	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	T	..	..	T	T	T
INVERTBRATES						
BRITTLE STARS	60	..	..	T	..	T
SEA URCHINS	60	3	15	1	..	..
HEART URCHIN	..	..	..	..	..	..
SEA CUCUMBER	T	..	T	..	..	..
OTHERS	1	1	T	5	1	1
FLATFISH						
DAB (PACIFIC)	..	..	..	T	15	30
FLATHEAD SOLE	..	1	2	T	..	..
REX SOLE	T	T	T	7	15	T
TURBOT	T	T	T	1	5	..
OTHERS	T	6	2	6	26	2
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	T	T	T	T	T	..
OTHER ROUNDFISH						
EULACHON	T	T	2	T	..	T
LINGCOD	6	25	15	T	12	T
WALLEYE POLLOCK	T	155	20	T	..	..
TOMCOD	..	..	..	..	5	T
OTHERS	T	13	4	T	T	T
SELACHI						
DOGFISH	10	76	18	4	5	..
OTHERS	3	2	T	T	T	..

Appendix table 1 (cont'd)

HAUL NO.	13	14	15	16	17	18
DATE	MAY 5	MAY 5	MAY 5	MAY 5	MAY 5	MAY 5
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1127	1232	1336	1445	1640	1755
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	51.2	50.3	50.8	49.1	52.8	51.0
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	10.8	12.3	15.6	16.6	20.2	21.8
DIRECTION (DEG.TRUE)	138	332	148	323	157	328
FINISH N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	50.2	51.7	49.6	50.3	51.5	52.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	9.4	13.4	14.5	17.9	19.3	23.0
DISTANCE NAUT. MI.	1.4	1.5	1.5	1.5	1.5	1.6
DEPTH (FATHOMS)	64- 62	70- 70	78- 78	85- 86	84- 81	95- 92
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	12.7	..	13.5	12.5	12.5
BOTTOM TEMP. (DEG.C)	..	8.4	..	7.8	7.9	7.9
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	55	..	242	178	156	174
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	13	14	15	16	17	18
DATE	MAY 5	MAY 5	MAY 5	MAY 5	MAY 5	MAY 5
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	55	0	242	178	156	174
SHRIMP						
PINK (JORDANI)	..	T	T	..	T	T
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	..	T	1	..
INVERTBRATES						
BRITTLE STARS	..	T	..	..	..	..
SEA URCHINS	T	..	5	T	5	T
HEART URCHIN	..	..	T	..	T	..
SEA CUCUMBER	..	..	1	T	..	T
OTHERS	T	T	T	T	T	T
FLATFISH						
DAB (PACIFIC)	10	..	..	..	..	..
FLATHEAD SOLE	..	..	2	..	18	14
REX SOLE	10	T	20	12	18	22
TURBOT	5	T	2	24	3	T
OTHERS	5	..	12	..	6	14
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	..	3	6	15	2
OTHER ROUNDFISH						
EULACHON	..	..	..	30	7	86
LINGCOD	3	..	25	14	10	11
WALLEYE POLLOCK	..	..	5	..	15	10
TOMCOD	5	..	..	79	..	14
OTHERS	3	T	3	13	2	1
SELACHI						
DOGFISH	..	..	164	..	56	..
OTHERS	14	T	T	..	..	T

Appendix table 1 (cont'd)

HAUL NO.	19	20	21	22	23	24
DATE	MAY 6	MAY 6	MAY 6	MAY 6	MAY 6	MAY 6
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	715	820	940	1111	1415	1610
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	51.9	53.8	53.1	57.0	55.5	55.7
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	16.4	14.3	10.8	14.2	21.6	18.8
DIRECTION (DEG.TRUE)	330	150	330	154	154	130
FINISH N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	53.1	52.5	54.5	56.1	54.2	54.8
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	17.2	13.8	11.8	13.6	20.6	17.3
DISTANCE NAUT. MI.	1.3	1.4	1.6	1.0	1.5	1.4
DEPTH (FATHOMS)	71- 76	68- 70	60- 60	63- 62	80- 82	75- 73
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	12.7	..	..	..	..
BOTTOM TEMP. (DEG.C)	..	8.3	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	203	155	102	207	74	122
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	19	20	21	22	23	24
DATE	MAY 6	MAY 6	MAY 6	MAY 6	MAY 6	MAY 6
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	203	155	102	207	74	122
SHRIMP						
PINK (JORDANI)	40	..	..	..	..	..
NUM/KG	186	..	..	..	..	..
OTHER SHRIMP	T	T	..	..	..	..
INVERTBRATES						
BRITTLE STARS	T	..	..	..	..	..
SEA URCHINS	1	T	..	..	3	T
HEART URCHIN	1	..	T	50	T	2
SEA CUCUMBER	..	..	..	T	..	T
OTHERS	5	T	T	T	T	T
FLATFISH						
DAB (PACIFIC)	T	2	20	50	..	..
FLATHEAD SOLE	T	..	..	..	30	7
REX SOLE	14	22	20	50	15	35
TURBOT	5	..	T	..	T	..
OTHERS	32	14	2	9	T	T
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	2	T	..	..	T	T
OTHER ROUNDFISH						
EULACHON	2	T	T	..	3	..
LINGCOD	10	10	..	5	9	2
WALLEYE POLLOCK	3	..	..	..	2	10
TOMCOD	..	T	5	5	T	..
OTHERS	T	T	T	T	T	1
SELACHI						
DOGFISH	84	107	49	36	12	65
OTHERS	4	T	6	2	T	T

Appendix table 1 (cont'd)

HAUL NO.	25	26	27	28	29	30
DATE	MAY 6	MAY 7	MAY 7	MAY 7	MAY 7	MAY 7
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1720	719	839	955	1135	1245
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	48	48	48	48	48	48
(MIN)	56.6	59.2	57.5	58.1	56.6	59.1
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	16.6	16.1	17.9	20.8	22.8	24.8
DIRECTION (DEG.TRUE)	150	150	330	150	317	341
FINISH N. LAT. (DEG)	48	48	48	48	48	49
(MIN)	55.4	58.0	58.7	56.8	57.6	0.4
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	15.6	14.9	18.8	20.1	24.2	25.5
DISTANCE NAUT. MI.	1.4	1.5	1.3	1.4	1.3	1.4
DEPTH (FATHOMS)	70- 70	63- 63	70- 70	76- 76	82- 82	81- 79
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	..	11.9	11.7	..	12.2
BOTTOM TEMP. (DEG.C)	..	..	8.3	..	..	8.0
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	135	40	121	155	86	71
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	25	26	27	28	29	30
DATE	MAY 6	MAY 7	MAY 7	MAY 7	MAY 7	MAY 7
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	135	40	121	155	86	71
SHRIMP						
PINK (JORDANI)	..	..	..	..	..	T
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	T	..	..	T
INVERTBRATES						
BRITTLE STARS	..	..	..	..	..	..
SEA URCHINS	2	..	1	T	1	T
HEART URCHIN	..	T	1	T	1	..
SEA CUCUMBER	T	..	2	T	1	1
OTHERS	T	T	1	1	T	2
FLATFISH						
DAB (PACIFIC)	..	T	..	..	..	..
FLATHEAD SOLE	10	..	10	15	24	15
REX SOLE	25	2	20	17	24	15
TURBOT	..	T	..	..	T	..
OTHERS	1	T	5	T	..	1
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	T	T	T	1	T	1
OTHER ROUNDFISH						
EULACHON	..	..	T	..	2	1
LINGCOD	2	T	5	12	22	8
WALLEYE POLLOCK	3	..	1	T	1	2
TOMCOD	T	3	T	..	..	..
OTHERS	4	T	1	2	1	T
SELACHI						
DOGFISH	88	35	69	107	9	24
OTHERS	..	..	5	T	T	1

Appendix table 1 (cont'd)

HAUL NO.	31	32	33	34	35	36
DATE	MAY 7	MAY 7	MAY 8	MAY 8	MAY 8	MAY 8
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1406	1654	720	830	952	1128
DURATION (HR.MIN)	.30	.29	.30	.30	.30	.30
START N. LAT. (DEG)	48	49	49	49	48	49
(MIN)	59.8	2.7	2.2	0.5	59.7	2.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	28.2	27.9	15.7	17.4	21.9	23.3
DIRECTION (DEG.TRUE)	155	150	150	330	330	324
FINISH N. LAT. (DEG)	48	49	49	49	49	49
(MIN)	58.4	1.5	1.2	1.8	1.0	3.4
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	27.2	26.9	14.9	18.3	23.0	24.4
DISTANCE NAUT. MI.	1.6	1.5	1.2	1.5	1.6	1.3
DEPTH (FATHOMS)	84- 85	76- 78	52- 53	63- 61	75- 75	72- 71
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	11.8	..	..	11.7	..
BOTTOM TEMP. (DEG.C)	..	8.2	..	..	8.3	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	219	121	244	191	98	63
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	31	32	33	34	35	36
DATE	MAY 7	MAY 7	MAY 8	MAY 8	MAY 8	MAY 8
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	219	121	244	191	98	63
SHRIMP						
PINK (JORDANI)	..	T	..	..	T	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	T	T	..	..	T	..
INVERTBRATES						
BRITTLE STARS	..	..	..	..	..	..
SEA URCHINS	1	T	..	..	T	..
HEART URCHIN	..	T	..	T	1	T
SEA CUCUMBER	98	4	..	..	..	..
OTHERS	2	1	4	T	3	T
FLATFISH						
DAB (PACIFIC)	..	..	25	6	..	..
FLATHEAD SOLE	..	10	..	..	14	10
REX SOLE	30	25	50	8	12	10
TURBOT	3	..	..	T	..	..
OTHERS	4	6	33	1	2	5
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	T
OTHERS	12	..	..	..	10	T
OTHER ROUNDFISH						
EULACHON	2	T	..	..	T	..
LINGCOD	29	25	10	8	10	32
WALLEYE POLLOCK	3	..	..	..	T	..
TOMCOD	..	..	85	30	T	5
OTHERS	..	T	T	3	T	1
SELACHI						
DOGFISH	35	24	31	133	41	..
OTHERS	..	26	6	2	5	..

Appendix table 1 (cont'd)

HAUL NO.	37	38	39	40	41	42
DATE	MAY 8	MAY 8	MAY 8	MAY 8	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1256	1413	1605	1715	720	845
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	2.6	5.2	5.9	4.1	3.2	5.9
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	20.4	22.6	26.8	28.6	32.5	37.6
DIRECTION (DEG.TRUE)	333	320	152	315	315	300
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	4.3	6.4	4.7	5.0	4.1	6.6
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	21.7	24.2	25.8	30.0	33.8	39.4
DISTANCE NAUT. MI.	1.8	1.6	1.4	1.3	1.3	1.4
DEPTH (FATHOMS)	64- 63	67- 60	66- 70	72- 73	78- 76	74- 75
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	..	..	..	11.5	..
BOTTOM TEMP. (DEG.C)	..	..	..	..	8.2	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	1	48	94	1075	45	41
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	37	38	39	40	41	42
DATE	MAY 8	MAY 8	MAY 8	MAY 8	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	1	48	94	1075	45	41
SHRIMP						
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	..	..	..	T
INVERTBRATES						
BRITTLE STARS	..	..	..	..	..	1
SEA URCHINS	..	..	..	..	5	..
HEART URCHIN	..	T	..	..	..	..
SEA CUCUMBER	..	..	..	..	4	..
OTHERS	..	T	T	..	T	T
FLATFISH						
DAB (PACIFIC)	..	20	..	..	..	T
FLATHEAD SOLE	..	..	4	..	2	..
REX SOLE	..	10	10	..	12	..
TURBOT	..	..	..	..	..	..
OTHERS	..	6	3	..	4	1
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	1	..	..	..
OTHERS	..	..	T	..	T	..
OTHER ROUNDFISH						
EULACHON	..	..	T	..	T	..
LINGCOD	..	..	47	1046	14	35
WALLEYE POLLOCK	..	..	..	..	T	T
TOMCOD	..	7	6	..	..	..
OTHERS	1	3	1	2	..	1
SELACHI						
DOGFISH	..	2	22	27	4	3
OTHERS	..	..	..	..	T	..

Appendix table 1 (cont'd)

HAUL NO.	43	44	45	46	47	48
DATE	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
TIME START (PST)	1025	1154	1303	1414	1607	1729
DURATION (HR.MIN)	.30	.30	.30	.30	.31	.31
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	7.2	7.2	8.9	8.1	9.4	10.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	29.9	27.3	26.4	22.9	31.3	35.9
DIRECTION (DEG.TRUE)	315	332	140	318	316	127
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	8.1	8.4	7.8	9.4	10.5	9.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	31.3	28.3	25.0	24.6	32.9	33.7
DISTANCE NAUT. MI.	1.4	1.4	1.5	1.8	1.5	1.8
DEPTH (FATHOMS)	68- 68	66- 64	58- 57	52- 52	65- 65	66- 67
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP. (DEG.C)	..	..	..	..	11.9	..
BOTTOM TEMP. (DEG.C)	..	..	..	..	8.3	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	102	157	71	15	102	32
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	43	44	45	46	47	48
DATE	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9	MAY 9
AREA	CLSD	CLSD	CLSD	CLSD	CLSD	CLSD
CATCH TOTAL (KG)	102	157	71	15	102	32
SHRIMP						
PINK (JORDANI)	..	..	..	..	..	T
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
BRITTLE STARS	T	..	..	..	..	..
SEA URCHINS	..	..	..	..	..	..
HEART URCHIN	..	..	T	..	T	..
SEA CUCUMBER	T	..	..	..	..	..
OTHERS	T	..	T	..	T	T
FLATFISH						
DAB (PACIFIC)	..	..	8	3	6	..
FLATHEAD SOLE	1	..	..	..	..	T
REX SOLE	4	4	8	T	10	10
TURBOT	..	..	..	..	..	..
OTHERS	T	2	11	T	4	2
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	4
S. PINNIGER	..	1	..	..	..	..
OTHERS	..	..	..	..	..	..
OTHER ROUNDFISH						
EULACHON	..	..	..	..	..	..
LINGCOD	28	39	24	T	17	1
WALLEYE POLLOCK	T	..	..	..	..	..
TOMCOD	8	6	10	5	35	6
OTHERS	1	T	T	7	T	..
SELACHI						
DOGFISH	60	105	10	..	30	9
OTHERS	..	..	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	49	50	51	52	53	54
DATE	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10
AREA	CLSD	CLSD	CLSD	NOSD	NOSD	NOSD
TIME START (PST)	717	845	1017	1221	1520	1700
DURATION (HR.MIN)	.35	.30	.30	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	13.0	13.3	12.0	13.2	11.5	8.8
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	30.8	34.2	35.7	52.7	57.7	55.1
DIRECTION (DEG.TRUE)	310	138	324	324	319	326
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	14.1	12.2	13.1	14.4	12.6	10.1
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	32.5	32.7	36.9	54.1	59.2	56.3
DISTANCE NAUT. MI.	1.6	1.6	1.4	1.6	1.5	1.6
DEPTH (FATHOMS)	57- 56	61- 61	65- 61	84- 81	117-115	120-118
SEE FIGURE NO.	2	2	2	3	3	3
SURFACE TEMP. (DEG.C)	..	..	..	12.4	12.2	12.2
BOTTOM TEMP. (DEG.C)	..	..	..	8.1	7.8	7.9
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	103	15	78	4204	175	331
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	49	50	51	52	53	54
DATE	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10	MAY 10
AREA	CLSD	CLSD	CLSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	103	15	78	4204	175	331
SHRIMP						
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
BRITTLE STARS	T	..	..	..	T	..
SEA URCHINS	..	..	..	..	33	5
HEART URCHIN	T	T	..	..	..	..
SEA CUCUMBER	..	..	T	..	2	..
OTHERS	T	T	T	..	T	..
FLATFISH						
DAB (PACIFIC)	15	..	T	..	..	..
FLATHEAD SOLE	..	T	..	..	T	..
REX SOLE	8	T	10	..	13	18
TURBOT	..	..	T	..	..	3
OTHERS	3	T	4	T	7	24
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	24	167
S. PAUCISPINIS	..	..	..	156	7	4
S. PINNIGER	1	..	..	4017	33	..
OTHERS	..	..	..	..	7	T
OTHER ROUNDFISH						
EULACHON	..	T	..	..	..	24
LINGCOD	14	8	35	20	14	37
WALLEYE POLLOCK	..	..	..	..	1	..
TOMCOD	28	..	25	..	..	..
OTHERS	T	T	T	..	7	7
SELACHI						
DOGFISH	34	7	4	11	26	25
OTHERS	..	..	..	..	1	17

Appendix table 1 (cont'd)

HAUL NO.	55	56	57	58	59	60
DATE	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
TIME START (PST)	715	827	935	1113	1235	1335
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	15.9	17.7	16.3	18.0	17.6	19.5
W. LONG. (DEG)	127	127	126	126	126	126
(MIN)	3.5	1.6	58.5	56.8	53.3	56.3
DIRECTION (DEG.TRUE)	318	156	320	138	339	335
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	16.9	16.3	17.8	16.7	19.0	21.1
W. LONG. (DEG)	127	127	126	126	126	126
(MIN)	5.1	0.7	59.7	55.1	54.6	56.1
DISTANCE NAUT. MI.	1.5	1.5	1.7	1.8	1.7	1.6
DEPTH (FATHOMS)	104-100	86- 91	91- 84	84- 84	80- 82	84- 82
SEE FIGURE NO.	3	3	3	3	3	3
SURFACE TEMP. (DEG.C)	..	12.2	..	..	13.2	..
BOTTOM TEMP. (DEG.C)	..	7.8	..	..	8.1	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	12	51	91	307	58	105
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	55	56	57	58	59	60
DATE	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11	MAY 11
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	12	51	91	307	58	105
SHRIMP						
PINK (JORDANI)	..	..	..	242	35	..
NUM/KG	..	..	..	274	325	..
OTHER SHRIMP	T	T	..	..	..	..
INVERTBRATES						
BRITTLE STARS	..	T	3	T	..	..
SEA URCHINS	2	T	T	1	2	T
HEART URCHIN	..	..	..	..	..	..
SEA CUCUMBER	T	6	..	1	..	T
OTHERS	T	T	T	..	T	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	T	..
FLATHEAD SOLE	..	..	T	2	2	5
REX SOLE	2	18	35	2	6	2
TURBOT	..	..	T	1	T	..
OTHERS	..	9	2	3	2	..
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	1	2	T	..	T	10
OTHER ROUNDFISH						
EULACHON	1	1	15	10	1	34
LINGCOD	6	6	31	38	7	32
WALLEYE POLLOCK	..	T	T	1	T	17
TOMCOD	..	..	..	..	..	..
OTHERS	..	T	T	..	T	..
SELACHI						
DOGFISH	..	9	5	6	3	5
OTHERS	T	..	..	..	T	..

Appendix table 1 (cont'd)

HAUL NO.	61	62	63	64	65	66
DATE	MAY 11	MAY 11	MAY 11	MAY 12	MAY 12	MAY 12
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
TIME START (PST)	1440	1613	1723	720	840	942
DURATION (HR.MIN)	.30	.31	.30	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	19.9	22.4	20.8	25.0	23.9	25.3
W. LONG. (DEG)	126	126	126	126	126	126
(MIN)	58.5	55.2	50.3	59.9	57.0	55.6
DIRECTION (DEG.TRUE)	230	144	137	158	340	150
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	18.8	21.2	19.7	23.6	25.1	24.1
W. LONG. (DEG)	127	126	126	126	126	126
(MIN)	0.2	54.0	48.6	59.1	58.0	54.8
DISTANCE NAUT. MI.	1.6	1.5	1.6	1.5	1.4	1.3
DEPTH (FATHOMS)	80- 81	76- 77	68- 65	74- 76	75- 73	69- 71
SEE FIGURE NO.	3	3	3	3	3	3
SURFACE TEMP. (DEG.C)	..	13.5	..	..	13.6	..
BOTTOM TEMP. (DEG.C)	..	7.8	..	..	7.8	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	46	156	71	663	131	150
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	61	62	63	64	65	66
DATE	MAY 11	MAY 11	MAY 11	MAY 12	MAY 12	MAY 12
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	46	156	71	663	131	150
SHRIMP						
PINK (JORDANI)	T	..	..	574	..	..
NUM/KG	..	..	..	278	..	..
OTHER SHRIMP	..	..	T	..	..	..
INVERTBRATES						
BRITTLE STARS	T	..	..	..	..	..
SEA URCHINS	T	..	..	..	..	..
HEART URCHIN	..	..	T	..	..	..
SEA CUCUMBER	T	T	T	T	1	..
OTHERS	T	1	T	1	T	T
FLATFISH						
DAB (PACIFIC)	T	..	8	..	..	1
FLATHEAD SOLE	..	12	..	4	3	T
REX SOLE	12	23	3	4	3	41
TURBOT	T	..	..	..	1	..
OTHERS	6	5	11	18	T	4
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	1	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	5	3	1	..	..	..
OTHERS	..	2	30	T	..	..
OTHER ROUNDFISH						
EULACHON	1	T	..	T	4	..
LINGCOD	8	30	7	6	4	21
WALLEYE POLLOCK	..	5	..	51	T	1
TOMCOD	..	..	1	T	T	1
OTHERS	1	1	..	4	2	..
SELACHI						
DOGFISH	13	74	9	..	112	80
OTHERS	T	T	..	1	1	1

Appendix table 1 (cont'd)

HAUL NO.	67	68	69	70	71	72
DATE	MAY 12	MAY 12	MAY 12	MAY 12	MAY 12	MAY 12
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
TIME START (PST)	1114	1220	1334	1435	1625	1731
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	26.9	27.9	26.1	29.1	28.4	29.1
W. LONG. (DEG)	126	126	127	127	127	127
(MIN)	55.9	59.7	2.4	4.2	6.4	9.8
DIRECTION (DEG.TRUE)	318	145	340	333	332	150
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	28.1	26.8	27.8	30.6	29.8	28.0
W. LONG. (DEG)	126	126	127	127	127	127
(MIN)	57.5	58.5	3.4	5.3	7.6	8.9
DISTANCE NAUT. MI.	1.7	1.4	1.7	1.8	1.7	1.3
DEPTH (FATHOMS)	64- 64	68- 69	78- 76	75- 73	79- 79	82- 82
SEE FIGURE NO.	3	3	3	3	3	3
SURFACE TEMP. (DEG.C)	..	..	13.0	..	..	..
BOTTOM TEMP. (DEG.C)	..	..	7.7	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	69	49	284	44	90	162
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	67	68	69	70	71	72
DATE	MAY 12	MAY 12	MAY 12	MAY 12	MAY 12	MAY 12
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NOSD
CATCH TOTAL (KG)	69	49	284	44	90	162
SHRIMP						
PINK (JORDANI)	..	..	29	..	..	..
NUM/KG	..	..	314	..	..	..
OTHER SHRIMP	..	T	..	..	..	..
INVERTBRATES						
BRITTLE STARS	..	..	..	..	3	1
SEA URCHINS	..	..	..	..	1	T
HEART URCHIN	..	T	..	..	..	..
SEA CUCUMBER	..	..	1	T	T	..
OTHERS	..	T	..	T	1	..
FLATFISH						
DAB (PACIFIC)	2	4	1	1	..	..
FLATHEAD SOLE	..	..	..	..	..	..
REX SOLE	2	4	..	1	3	..
TURBOT	..	..	1	1	T	..
OTHERS	2	2	1	2	3	6
ROCKFISH						
S. ALUTUS	..	..	..	..	..	..
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	5	6	..
S. PINNIGER	..	..	2	..	..	1
OTHERS	..	..	..	..	..	1
OTHER ROUNDFISH						
EULACHON	..	..	2	T	T	25
LINGCOD	4	25	72	8	30	65
WALLEYE POLLOCK	..	..	4	T	27	T
TOMCOD	12	12	T	T	..	..
OTHERS	T	2	3	2	3	6
SELACHI						
DOGFISH	47	..	167	24	13	57
OTHERS	..	..	1	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	73	74	75	76	77	78
DATE	MAY 13	MAY 13	MAY 13	MAY 13	MAY 13	MAY 14
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NEGI
TIME START (PST)	715	825	935	1119	1235	718
DURATION (HR.MIN)	.30	.30	.30	.30	.27	.30
START N. LAT. (DEG)	49	49	49	49	49	51
(MIN)	30.7	29.1	31.7	32.2	30.7	25.0
W. LONG. (DEG)	126	127	127	127	127	128
(MIN)	59.8	1.8	4.1	9.2	12.4	46.2
DIRECTION (DEG.TRUE)	137	335	334	152	335	170
FINISH N. LAT. (DEG)	49	49	49	49	49	51
(MIN)	29.4	30.5	32.9	30.7	31.7	23.5
W. LONG. (DEG)	126	127	127	127	127	128
(MIN)	58.0	2.5	5.0	8.0	13.2	45.9
DISTANCE NAUT. MI.	1.8	1.5	1.4	1.7	1.2	1.5
DEPTH (FATHOMS)	63- 62	69- 67	69- 68	78- 79	87- 85	115-122
SEE FIGURE NO.	3	3	3	3	3	4
SURFACE TEMP. (DEG.C)	..	..	..	..	12.7	..
BOTTOM TEMP. (DEG.C)	..	..	..	..	7.6	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	92	127	106	248	59	203
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	73	74	75	76	77	78
DATE	MAY 13	MAY 13	MAY 13	MAY 13	MAY 13	MAY 14
AREA	NOSD	NOSD	NOSD	NOSD	NOSD	NEGI
CATCH TOTAL (KG)	92	127	106	248	59	203
SHRIMP						
PINK (JORDANI)	..	..	T	..	T	30
NUM/KG	..	..	..	..	..	256
OTHER SHRIMP	..	T	T	T	..	T
INVERTBRATES						
BRITTLE STARS	T	T	T	7	3	T
SEA URCHINS	..	..	..	4	T	..
HEART URCHIN	T	..	..	..	..	..
SEA CUCUMBER	..	1	..	1	..	..
OTHERS	..	T	T	T	..	T
FLATFISH						
DAB (PACIFIC)	T	5	T	..	..	..
FLATHEAD SOLE	..	..	..	..	..	..
REX SOLE	T	T	..	..	..	1
TURBOT	..	T	T	..	..	34
OTHERS	2	5	3	1	21	39
ROCKFISH						
S. ALUTUS	..	..	..	..	..	62
S. BREVISPINIS	..	..	..	..	..	..
S. PAUCISPINIS	..	..	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	..	..	..	..	T	18
OTHER ROUNDFISH						
EULACHON	..	T	T	T	..	6
LINGCOD	9	14	15	46	22	..
WALLEYE POLLOCK	..	..	T	..	1	..
TOMCOD	6	1	..	..	..	..
OTHERS	T	T	..	..	12	5
SELACHI						
DOGFISH	75	101	85	189	..	8
OTHERS	..	..	3	..	..	T

Appendix table 1 (cont'd)

HAUL NO.	79	80	81	82	83	84
DATE	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14
AREA	NEGI	NEGI	NEGI	NEGI	NEGI	NEGI
TIME START (PST)	832	943	1117	1228	1340	1454
DURATION (HR.MIN)	.30	.30	.30	.30	.30	.31
START N. LAT. (DEG)	51	51	51	51	51	51
(MIN)	22.7	26.4	25.2	28.7	28.9	28.1
W. LONG. (DEG)	128	128	128	128	128	128
(MIN)	43.4	40.3	37.1	33.7	30.4	26.8
DIRECTION (DEG.TRUE)	350	350	5	358	183	195
FINISH N. LAT. (DEG)	51	51	51	51	51	51
(MIN)	23.9	28.0	26.8	30.4	27.2	26.6
W.LONG. (DEG)	128	128	128	128	128	128
(MIN)	43.3	40.1	37.0	33.9	30.8	27.5
DISTANCE NAUT. MI.	1.3	1.6	1.8	1.8	1.6	1.5
DEPTH (FATHOMS)	122-121	115-105	118-116	110-103	109-113	106-107
SEE FIGURE NO.	4	4	4	4	4	4
SURFACE TEMP. (DEG.C)	..	11.7	..	..	11.9	..
BOTTOM TEMP. (DEG.C)	..	6.7	..	..	6.7	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	230	225	26	26	11	1
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	79	80	81	82	83	84
DATE	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14	MAY 14
AREA	NEGI	NEGI	NEGI	NEGI	NEGI	NEGI
CATCH TOTAL (KG)	230	225	26	26	11	1
SHRIMP						
PINK (JORDANI)	30	6	6	1	T	T
NUM/KG	..	..	372	..	..	..
OTHER SHRIMP	T	T	T	T	..	..
INVERTBRATES						
BRITTLE STARS	1	T	..	..	..	..
SEA URCHINS	1	..	..	..	..	..
HEART URCHIN	..	..	..	..	..	..
SEA CUCUMBER	T	..	..	..	..	..
OTHERS	T	T	T	..	..	..
FLATFISH						
DAB (PACIFIC)	..	..	..	..	..	..
FLATHEAD SOLE	..	..	..	..	..	..
REX SOLE	..	..	..	..	..	..
TURBOT	60	71	10	4	..	1
OTHERS	54	15	3	..	..	..
ROCKFISH						
S. ALUTUS	63	121	4	12	T	..
S. BREVISPINIS	..	T	..	..	..	..
S. PAUCISPINIS	..	5	..	..	..	..
S. PINNIGER	..	..	..	..	..	..
OTHERS	8	T	1	..	T	T
OTHER ROUNDFISH						
EULACHON	T	T	T	4	T	T
LINGCOD	..	..	..	..	..	..
WALLEYE POLLOCK	1	..	2	1	9	..
TOMCOD	..	..	..	..	..	..
OTHERS	..	2	..	..	1	..
SELACHI						
DOGFISH	10	5	..	4	1	..
OTHERS	2	..	..	..	..	..

FOOTNOTES TO APPENDIX TABLE.

AREA: CLSD = Tofino Ground.
NOSD = Nootka Ground.
NEGI = Northeast Goose Island Gully, Queen Charlotte Sound.

TIME START: Pacific Standard Time.

TYPE OF GEAR: 8 = National Marine Fisheries shrimp sampling trawl.

T: Trace (1 kg).
t: Metric tonne = 2204 pounds.
M^2: Square nautical mile.
M: Nautical mile.